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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/788,697	02/27/2004	Timothy R. Coulter	VRT0119US	6928

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EXAMINER	
LEE, WILSON	
ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/788,697	COULTER ET AL.	
	Examiner	Art Unit	
	Wilson Lee	2163	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 December 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4,7-12,14,17-20,22,25-29,31,32,35 and 37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4,7,10-12,14,19,20,22,25-29,31,32,35 and 37* is/are rejected.

7)☒ Claim(s) *8,9,17 and 18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Claim Rejections – 35 U.S.C. 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 19, 20, 22, 25-29, 31, 32 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The basis of this rejection is set forth in a test of whether the invention is categorized as a process, machine, manufacture or composition or matter and if the invention produces a useful, concrete and tangible result. Mere ideas in the abstract (i.e., abstract idea, law of nature, natural phenomena) are found to be non-statutory subject matter.

In claims 19, 22, 25, 26, the "means" for system are seemingly software components according to the specification. The claimed invention fails to fit with in any of the above patentable categories. It is merely functional descriptive material and is nonstatutory.

Claim 20 is rejected by virtue by its dependency on claim 19.

In claims 27, 29, 31, 32, the "modules" for system are seemingly software components according to the specification. The claimed invention fails to fit with in any of the above patentable categories. It is merely functional descriptive material and is nonstatutory.

Claim 28 is rejected by virtue by its dependency on claim 27.

Claim Rejections – 35 U.S.C. 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1, 2, 4, 7, 10-12, 14, 19, 20, 22, 27-29, 35, 37 are rejected under 35 U.S.C. 102(e) as being anticipated by Iwamura et al. (7,130,974).

Regarding Claim 1, Iwamura discloses a method comprising:

- maintaining a synchronous copy (the copy in 100 is a synchronous copy because it is synchronizing with 225C. See Col. 24, lines 40-51) of a data change log ("..holding a change of metadata existing for each file of a file system in form of a log…" Col. 24, lines 41-43) at a primary node (100 or "first site", Col. 39, line 37), wherein said data change log at said primary node is associated (see 2202 is linked to 225A) with a primary data volume (225A) of said primary node (fig. 22); and

- said synchronous copy ("synchronous remote copy" Col. 24, lines 49-51) of said data change log is maintained at a data recovery node (stored in 225C within 170 or "second site", Col. 2, line 39);
- asynchronously ("…having asynchronous remote copy function" Col. 25, lines 54-58) updating a secondary data volume (225D) of a secondary node (180 or "third site", Col. 2, line 41) using said synchronous copy (data of 225D and 225C are the same copy, figs. 12, 14) of said data change log.

Regarding Claim 2, Iwamura discloses that the secondary data volume (225D) is updated in response to detecting a failure ("stopped by a failure") of the primary data volume (225A within the primary site) (Col. 24, lines 17-26).

Regarding Claim 4, Iwamura discloses that said maintaining said synchronous copy comprises:

- receiving a request to perform a write operation (write request is inherent in order to have the data written) on said primary data volume (225A, "storage area") Col. 7, lines 61-65) (also see Col. 4, lines 1-9. "writing … of data to/from the storage subsystem 120" and Col. 1, lines 25-27);
- storing data (data stored in 225A) associated with said write operation (discussed above) substantially simultaneously (synchronous) on said data change log (a change of metadata existing for each file of a file system in form of a log…" Col. 24, lines 41-43) and said synchronous copy

(synchronous program 222) of said data change log in response to said receiving (Fig. 2).

Regarding Claim 7, Iwamura discloses that said updating comprises:

- receiving a manual update initiation indication ("processing is started by instructions of the user" Col. 10, lines 24-26);
- updating said secondary data volume (225D) using said real-time copy (the synchronous copy, same as the copy in 225C) of said data change log in response to said receiving.

Regarding Claim 10, Iwamura discloses the method further comprising:

- detecting a recovery of said primary data volume ("in case where the first site is recovered…") (Col. 2, lines 46-50); and
- re-synchronizing ("resume a synchronous") said primary data volume and said secondary data volume in response to said detecting (Col. 2, lines 46-50).

Regarding Claim 11, Iwamura discloses a machine-readable medium having comprising a plurality of instructions wherein said plurality of instructions when executed cause implement a method comprising:

- maintaining a synchronous copy (the copy in 100 is a synchronous copy because it is synchronizing with 225C. See Col. 24, lines 40-51) of a data change log ("..holding a change of metadata existing for each file of a file system in form of a log…" Col. 24, lines 41-43) at a primary node (100 or "first site", Col. 39, line 37), wherein said data change log at said primary node is

associated (see 2202 is linked to 225A) with a primary data volume of said primary node and said synchronous copy of said data change log is maintained at a data recovery node (stored in 225C within 170 or "second site", Col. 2, line 39);

- asynchronously ("…having asynchronous remote copy function" Col. 25, lines 54-58) updating a secondary data volume (225D) of a secondary node (180 or "third site", Col. 2, line 41) using said synchronous copy (data of 225D and 225C are the same copy, figs. 12, 14).

Regarding Claim 12, Iwamura discloses that the secondary data volume is updated in response to detecting a failure ("stopped by a failure") of the primary data volume (225A within the primary site) (Col. 24, lines 17-26)

Regarding Claim 14, Iwamura discloses that said maintaining said synchronous copy comprises:

- receiving a request to perform a write operation (write request is inherent in order to have the data written) on said primary data volume (225A, "storage area") Col. 7, lines 61-65) (also see Col. 4, lines 1-9. "writing … of data to/from the storage subsystem 120" and Col. 1, lines 25-27);
- storing data (data stored in 225A) associated with said write operation substantially simultaneously (synchronous) on said data change log and said synchronous copy (synchronous program 222) of said data change log in response to said receiving (fig. 2).

Regarding Claim 19, Iwamura discloses a data processing system comprising:

- means for maintaining a synchronous copy (the copy in 100 is a synchronous copy because it is synchronizing with 225C. See Col. 24, lines 40-51) of a data change log ("..holding a change of metadata existing for each file of a file system in form of a log…" Col. 24, lines 41-43) at a primary node (100 or "first site", Col. 39, line 37) wherein said data change log at said primary node is associated (see 2202 is linked to 225A) with a primary data volume (225A) of said primary node (fig. 22); and
- said synchronous copy of said data change log is maintained at a data recovery node (stored in 225C within 170 or "second site", Col. 2, line 39)
- means for asynchronously ("…having asynchronous remote copy function" Col. 25, lines 54-58) updating a secondary data volume (225D) of a secondary node (180 or "third site", Col. 2, line 41) using said synchronous copy of said data change log. (data of 225D and 225C are the same copy, figs. 12, 14).

Regarding Claim 20, Iwamura discloses that the secondary data volume is updated in response to detecting a failure ("stopped by a failure") of the primary data volume (225A within the primary site) (Col. 24, lines 17-26).

Regarding Claim 22, Iwamura discloses that said means for maintaining said synchronous copy comprises:

- means (225A) for storing data associated with a requested write operation (write request is inherent in order to have the data written) on said primary data volume substantially simultaneously (synchronous) on said data change

log ("..holding a change of metadata existing for each file of a file system in form of a log…" Col. 24, lines 41-43) and said real-time copy (the synchronous copy, same as the copy in 225C) of said data change log.

Regarding Claim 27, Iwamura discloses a data processing system comprising:

- a storage element (225A) to store a synchronous copy (the copy in 100 is a synchronous copy because it is synchronizing with 225C. See Col. 24, lines 40-51) of a data change log ("..holding a change of metadata existing for each file of a file system in form of a log…" Col. 24, lines 41-43) at a primary node (100 or "first site", Col. 39, line 37), wherein said data change log at said primary node is associated (see 2202 is linked to 225A) with a primary data volume of said primary node (100 or "first site", Col. 39, line 37); and
- a recovery module (stored in 225C within 170 or "second site", Col. 2, line 39) configured to asynchronously ("…having asynchronous remote copy function" Col. 25, lines 54-58) update a secondary data volume (225D) of a secondary node (180 or "third site", Col. 2, line 41) using said synchronous copy of said data change log (data of 225D and 225C are the same copy, figs. 12, 14).

Regarding Claim 28, Iwamura discloses that the recovery module updates the secondary data volume in response to a failure ("stopped by a failure") of said primary data volume (225A within the primary site) (Col. 24, lines 17-26).

Regarding Claim 29, Iwamura discloses the data processing system further comprising:

- a volume management module ("…primary site 100 includes…mirror program 212, and a mirror configuration information 213") (Col. 5, lines 15-30) configured to mirror data to be written to said data change log to said synchronous real time copy the synchronous copy, same as the copy in 225C) of said data change log.

Regarding Claim 35, Iwamura discloses a method comprising:

- maintaining a synchronous copy (the copy in 100 is a synchronous copy because it is synchronizing with 225C. See Col. 24, lines 40-51) of a data change log ("..holding a change of metadata existing for each file of a file system in form of a log…" Col. 24, lines 41-43) at a primary node, wherein said data change log at said primary node is associated (see 2202 is linked to 225A) with a primary data volume of said primary node (100 or "first site", Col. 39, line 37) and
- said synchronous copy of said data change log is maintained at a data recovery node (stored in 225C within 170 or "second site", Col. 2, line 39)); and
- asynchronously replicating data ("…having asynchronous remote copy function" Col. 25, lines 54-58) to be written to said primary data volume (225A) from said primary node to said secondary node (180 or "third site", Col. 2, line 41) through second storage unit (225D).

Regarding Claim 37, Iwamura discloses the method further comprising:

- detecting a failure ("stopped by a failure") of said primary data volume (225A within the primary site) (Col. 24, lines 17-26); and

- updating a secondary data volume of said secondary node (180 or "third site", Col. 2, line 41) using said synchronous copy (data of 225D and 225C are the same copy, figs. 12, 14) of said data change log in response to said detecting.

Allowable subject matter

Claims 8, 9, 17, 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 25, 26, 31, 32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and the rejections under U.S.C. 101 are overcome.

Response to Arguments

Applicant's arguments with respect to claims 1, 2, 4, 7-12, 14, 17-20, 22, 25-29, 31, 32, 35, 37 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Tamatsu (US 2006/0143238). Kawamura et al. (US 2004/0193658) and Hamel et al. (US 2003/0212789).

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Wilson Lee whose telephone number is (571) 272-1824.

Papers related to the application may be submitted by facsimile transmission. Any transmission not to be considered an official response must be clearly marked "DRAFT". The official fax number is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Wilson Lee/
Primary Examiner, Art Unit 2163

3/3/08